

CURRENT LITERATURE.

Revision of Umbelliferae.¹

Botanists everywhere, and American botanists especially, owe a large debt of gratitude to Professors Coulter and Rose for the above work, now issued in its completed form. No order of our plants has been more difficult or was in greater confusion; and this, of late years, had been vastly increased by the many and often incomplete specimens of new far western species. The authors, at the beginning of their labors, wisely determined to study the better known and less difficult species of the eastern states first. The revision of these was completed and issued in 1887, and to it was appended an excellent paper on the "Development of the Umbellifer fruit." In the present issue is given a brief "Historical Sketch" of the bibliography of the subject and a good account of the geographical distribution of the species, with a statistical table appended. The vegetative organs, the inflorescence and the flower then receive attention, and then follows the final result of their studies of the fruit and its development. This introduction, as it were, to the systematic portion, closes with some notice of the "characters used in classification," and some pertinent "directions for collection and study." The first is especially interesting because of our authors' low estimate of the oil-tubes of the fruit as a divisional character. They do not use it in the primary divisions and even in the subdivisions it is put almost last in diagnostic importance. The "strengthening cells" under the ribs of the fruit of many species also receives marked and deserved attention.

Next comes the "Systematic Synopsis of the Genera" (with an "Artificial Key to the Genera"), and the "Systematic Synopsis of the Species." The former begins with the *Caucalineæ*, thus reversing the usual order. The first series comprises those genera, the fruit of which have the secondary ribs most prominent; but as this contains but 5 of the 59 genera and only as many species, it is the arrangement of the second series containing the remainder of the genera (those having the fruit with primary ribs only) which principally concerns us. The primary divisions are three; those genera whose fruit is strongly flattened dorsally (17), those whose fruit is not flattened at all or but slightly (11), and those with laterally flattened fruit (31). The relative strength is better shown by saying that of indigenous species the first division contains 87, the second 35, and the third 91. This arrangement leaves the sequence of genera much as we are accustomed to see it, except as before stated—a notable exception being the placing of *Erigenia* next to *Hydrocotyle*. There are 5 new genera, and 3 other genera, not heretofore recognized as represented in our flora, are admitted.

¹ COULTER, JOHN M., AND ROSE, J. N.—Revision of North American Umbelliferae. 8 vo. pp. 144, with nine plates. Crawfordsville, Ind. December, 1888. \$1.00.

In the "Synopsis of Species" is found the same careful and discriminating work. Following Bentham and Hooker, *Archangelica* is merged in *Angelica*, which contains sixteen species. *Archangelica Gmelini* DC. of the northern coasts becomes *Cælopleurum Gmelini* Led. The Colorado plant, so named, becomes *Selinum Grayi*, and this genus of seven species also includes those specimens from the northwest formerly referred to *Conioselinum Fischeri*, here divided between *S. Benthami* Wats. and *S. Hookeri* Wats. *Conioselinum* is again restored for *C. Canadense* T. & G. *Tiedemannia* is restored and includes *Archemora*, which thus disappears from our flora; in this the author's views are doubtless correct, as they are also in separating this genus (and *Pastinaca*) from *Peucedanum*, to which Bentham and Hooker joined them. A new genus, *Coloptera*, is formed by bringing together three species which have been variously referred to *Cymopterus*, *Ferula* and *Leptotænia*. To the last-named genus are again referred the species removed to *Ferula* by Drs. Gray and Watson, and this name also disappears. The dominating genus is *Peucedanum*, now increased to forty-three species, all belonging to the trans-Mississippi region. Of these the authors have contributed fourteen. In these nearly allied and somewhat difficult genera there is room for difference of opinion, but we apprehend that our authors have done very much to settle the proper relations of the genera and species. Other interesting new genera are *Pseudocymopterus*, a good genus containing *Thaspium montanum* Gray and two species formerly referred to *Cymopterus*; *Muse-niopsis* for *Tauschia Texana* Gray; *Harbouria* instituted for *Thaspium trachypleurum* Gray; and *Aletes*, also of a single species, which has a most curious history, well illustrating the former confusion of the order. *Oreoxis humilis* Raf. takes the place of *Cymopterus alpinus* Gray. *Podistera Nevadensis* Watson is retained for *Cymopterus Nevadensis* Gray. *Eulophus* is taken to include *Podosciadium* Gray. Our only native *Bupleurum* is well separated from *B. ranunculoides* L. under the name of *B. Americanum*. *Velæa* DC. is again separated from *Arracacia* and the species of *Deweya* are merged in it, and the name which commemorated the labors of a worthy botanist is dropped.

An admirable feature of this part of the work is to be found in the clear diagnostic notes in which the authors give their reasons for the formation of new genera or the re-arrangement of the species.

The excellent figures of cross-sections of the fruit are placed at the end of the work. There is also a good index, which is curiously interposed between the "list of figures" and the figures themselves.

This work, the authors say, is the result of "some four years of unremitting study." It has been time well spent for their own fame as well as for the advantage of botanists at large. They have brought to their work improved methods of study instead of relying wholly upon external characters, and have thereby advanced the grade and standing of systematic botany.—WM. M. CANBY.

Development of *Pilularia*.²

In undertaking the study of this interesting plant Dr. Campbell had in view two things, viz.: the investigation of its life-history, and the determination how far the paraffin imbedding-process was of practical application in the study of vegetable embryology. The method of imbedding was found eminently successful, and, as a consequence, the life-history of *Pilularia* is worked out as it never has been before. The material was kept in constant germination and the investigation was a most exhaustive one. The subject is treated under the following captions: the microspores and male prothallium, the macrospore and female prothallium, the embryo, the leaf, the root-quadrant, the stem-quadrant, the foot-quadrant, the structure and division of the nuclei in the embryo, subsequent growth of the young plant, and the relationships of the Marsiliaceæ. The study of the microspores is especially interesting, as the author succeeded in removing the exosporium and following the development of the prothallium and antheridium with great precision. The characters of these structures are much more nearly those of the true ferns than has heretofore been supposed. In reference to this relationship the author says: "Botanists have long recognized the evident relationship of the Marsiliaceæ to the true ferns, especially to the Polypodiaceæ, and this view is strengthened by the very great resemblance in the structure of the antheridium. Whether a more complete knowledge of Salviniaceæ will show further relationships between them and the Marsiliaceæ is doubtful, for apart from both families being heterosporous, they have little in common."

The Families of Plants.

Engler and Prantl's magnificent work³ has just reached the end of the second volume, the first one completed. It makes a book of 1024 pages, and contains 803 illustrations, which are made up of 3537 separate figures. These illustrations are not only abundant, but are of the finest execution. The work must be of immense service to botanists, and the low price of the parts places it within the reach of all. The various parts have been noticed in this journal, but with the conclusion of the volume it is a fitting time to note the contents. The orders presented are as follows: Alismaceæ (Buchenau), Amaryllidaceæ (Pax), Aponogetonaceæ (Engler), Araceæ (Engler), Bromeliaceæ (Wittmack), Burmanniaceæ (Engler), Butomaceæ (Buchenau), Cannaceæ (Petersen), Centrolepidaceæ (Hieronymus), Commelinaceæ (Schönland), Coniferæ (Eichler, Engler, Prantl), Cordaitaceæ (Engler), Cycadaceæ (Eichler, Engler, Prantl), Cy-

² CAMPBELL, DOUGLAS HOUGHTON.—The development of *Pilularia globulifera* L. [Reprint from Annals of Botany, Nov. 1888, pp. 233-264, with three plates.]

³ ENGLER A. and PRANTL, K.—Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten insbesondere den Nutzpflanzen; bearbeitet unter Mitwirkung zahlreicher hervorragender Fachgelehrten. II Teil in sechs Abteilungen. Mit 3537 Einzelbildern in 803 Figuren, 3 Vollbildern, sowie Abteilungs-Registern. Leipzig: Wilhelm Engelmann. 1889.

clanthaceæ (Drude), Cyperaceæ (Pax), Dioscoreaceæ (Pax), Eriocaulaceæ (Hieronymus), Flagellariaceæ (Engler), Gnetaceæ (Eichler), Gramineæ (Hackel), Hæmodoraceæ (Pax), Hydrocharitaceæ (Ascherson, Gürke), Iridaceæ (Pax), Juncaceæ (Buchenau), Juncaginaceæ (Buchenau, Hieronymus), Lemnaceæ (Engler), Liliaceæ (Engler), Marantaceæ (Petersen), Mayacaceæ (Engler), Musaceæ (Petersen), Naiadaceæ (Magnus), Orchidaceæ (Pfitzer), Palmæ (Drude), Pandanaceæ (Graf zu Solms), Philydraceæ (Engler), Pontederiaceæ (Schönland), Potamogetonaceæ (Ascherson), Rapateaceæ (Engler), Restionaceæ (Hieronymus), Sparganiaceæ (Engler), Stemonaceæ (Engler), Taccaceæ (Pax), Triuridaceæ (Engler), Typhaceæ (Engler), Velloziaceæ (Pax), Zingiberaceæ (Petersen).

Minor Notices.

MR. A. P. MORGAN has distributed the first part of a paper upon North American Gastromycetes, published as a reprint from the *Jour. Cin. Soc. Nat. Hist.* The present part presents the 5 genera of Phalloideæ, accompanied by a colored plate of a new Mutinus. The next part will begin the Lycoperdaceæ. As an outline of the work the author states that the five orders of Gastromycetes are represented by genera as follows: Phalloideæ 5, Lycoperdaceæ 10, Sclerodermaceæ 7, Hymenogastreae 6, Nidulariaceæ 5.

THE REPORT of the botanist, Mr. Chas. H. Peck, of the New York State Museum of Natural History,⁴ for the year 1887, was issued a short time ago, something over a year late. Fifty-two new species are described, all but two being Hymenomycetes. Altogether over a hundred species are added to the list already reported as belonging to the state flora. A very useful index of genera and species contained in the twenty-second to thirty-eighth reports is given. A paper on fungi destructive to wood, by Mr. P. H. Dudley, with four illustrations, is also included.

NO MORE IMPORTANT botanical contribution from the experiment stations has yet been published than the bulletin on "root rot of cotton or 'cotton blight,'" by Prof. L. H. Pammel.⁵ The author found himself at the outset confronted with a subject on which almost nothing had been written, and regarding which there was great diversity of opinion. He has carefully considered the prominent views, but after a full study of the diseased plants concludes that the disease is due to an injury of the roots by a fungus mycelium. It also affects sweet potatoes.

⁴PECK, CHAS. H.—Report of the botanist. (41st Annual Rep. St. Mus. Nat. Hist., for 1887, pp. 49-122.) 8vo. Troy Press Co., 1888.

⁵PAMMEL, L. H.—Root rot of cotton or "cotton blight." (Texas Agricultural Experiment Station, Bulletin No. 4.) 18 pp., 8vo. Houston, 1889.